



# FLOOD INSURANCE STUDY



## NEVADA COUNTY, CALIFORNIA AND INCORPORATED AREAS

**COMMUNITY NAME**  
GRASS VALLEY, CITY OF  
NEVADA CITY, CITY OF  
NEVADA COUNTY  
(UNINCORPORATED AREAS)  
TRUCKEE, TOWN OF

**COMMUNITY NUMBER**  
060211  
060453  
  
060210  
060762



February 3, 2010



**Federal Emergency Management Agency**

**FLOOD INSURANCE STUDY NUMBER**  
06057CV000A

EXCERPT Pg 1 of 73

NOTICE TO  
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Select Flood Insurance Rate Map panels for the community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross-sections). Former flood hazard zone designations have been changed as follows:

<u>Old Zone</u>	<u>New Zone</u>
A1 through A30	AE
B	X
C	X

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: February 3, 2010

## TABLE OF CONTENTS

### Table of Contents

	<u>Page</u>
1.0 <u>INTRODUCTION</u> .....	1
1.1 Purpose of Study.....	1
1.2 Authority and Acknowledgments.....	1
1.3 Coordination .....	3
2.0 <u>AREA STUDIED</u> .....	4
2.1 Scope of Study.....	4
2.2 Community Description .....	4
2.3 Principal Flood Problems .....	6
2.4 Flood Protection Measures .....	7
3.0 <u>ENGINEERING METHODS</u> .....	8
3.1 Hydrologic Analyses .....	8
3.2 Hydraulic Analyses .....	14
3.3 Vertical Datum .....	19
4.0 <u>FLOODPLAIN MANAGEMENT APPLICATIONS</u> .....	20
4.1 Floodplain Boundaries.....	21
4.2 Floodways.....	22
5.0 <u>INSURANCE APPLICATIONS</u> .....	34
6.0 <u>FLOOD INSURANCE RATE MAP</u> .....	34
7.0 <u>OTHER STUDIES</u> .....	36
8.0 <u>LOCATION OF DATA</u> .....	36
9.0 <u>BIBLIOGRAPHY AND REFERENCES</u> .....	36

### FIGURES

Figure 1 – Floodway Schematic .....	25
-------------------------------------	----

## TABLE OF CONTENTS, continued

### Table of Contents – continued

	<u>Page</u>
<u>TABLES</u>	
Table 1 – Initial and Final Pre-Countywide CCO Meetings.....	3
Table 2 – Flooding Sources Studied by Detailed Methods.....	4
Table 3 – Typical Plant Life in Nevada County.....	5
Table 4 – Summary of Discharges.....	12
Table 5 – Summary of Stillwater Elevations .....	14
Table 6 – Manning’s “n” Values .....	17
Table 7 – Vertical Datum Conversions .....	20
Table 8 – Floodway Data Tables .....	26
Table 9 – Community Map History.....	35

### EXHIBITS

#### Exhibit 1 – Flood Profiles

Clear Creek	Panel 01P
Deer Creek	Panels 02P – 04P
Donner Creek	Panels 05P – 06P
Little Wolf Creek	Panels 07P – 08P
South Fork Wolf Creek	Panels 09P – 10P
Squirrel Creek	Panels 11P – 13P
Squirrel Creek Tributary 1	Panel 14P
Squirrel Creek Tributary 2	Panel 15P
Squirrel Creek Tributary 2-1	Panel 16P
Summit Creek	Panels 17P – 20P
Trout Creek	Panels 21P – 22P
Truckee River	Panels 23P – 24P
Wolf Creek	Panel 25P – 30P

#### Exhibit 2 – Flood Insurance Rate Map Index Flood Insurance Rate Map

# FLOOD INSURANCE STUDY NEVADA COUNTY, CALIFORNIA AND INCORPORATED AREAS

## 1.0 INTRODUCTION

### 1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for the geographic area of Nevada County, California, including: the Cities of Grass Valley and Nevada City, the Town of Truckee, and the unincorporated areas of Nevada County (hereinafter referred to collectively as Nevada County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by Nevada County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

### 1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

This FIS was prepared to include all jurisdictions within Nevada County in a countywide FIS. The authority and acknowledgments prior to this countywide FIS were compiled from the previously identified FIS reports for flood prone jurisdictions within Nevada County and are shown below:

Grass Valley, City of: The hydrologic and hydraulic analyses for the original study were performed by Gill & Pulver Engineers, Inc., for the Federal Emergency Management Agency (FEMA), under Contract No. H-4824. This work, which was completed in September 1981, covered all significant flooding sources affecting the City of Grass Valley.

The hydrologic and hydraulic analyses for the August 19, 1991 study were prepared by Gill & Pulver Engineers, Inc.,

for FEMA, under Contract No. EMW-89-C-2846. This work was completed in November 1989.

This study was also revised on February 5, 1997 to show modifications to the flooding along an approximate 0.9-mile reach of Wolf Creek from approximately 2.2 miles to 3.1 miles upstream of Allison Ranch Road. As approximate 1.8-mile reach of Little Wolf Creek was studied upstream from State Highway 49. French Ravine was studied from its confluence with Wolf Creek upstream to near Brighton Street. Both creeks were studied by detailed methods; French Ravine was studied by approximate methods. The hydrologic and hydraulic analyses for the February 5, 1997 revision were performed for FEMA by Ensign & Buckley Consulting Engineers, under Contract No. EMW-90-C-9133, and by Gill & Pulver Engineers, Inc., under Contract No. EMW-89-C-2846.

Nevada County (Unincorporated areas): The hydrologic and hydraulic analyses for the original study were performed by Gill & Pulver Engineers, Inc., for FEMA, under Contract No. H-4824. This study was completed in August 1981.

Revised analyses have been performed for Donner Lake, Donner Creek, and Summit Creek for the July 2, 1987 revised study. The revised analyses are based on information provided by the following: U.S. Army Corps of Engineers (USACE), Sacramento District; California Department of Water Resources (CA DWR), Division of Safety and Dams; G & P, the study contractor for the original study; Mr. Earl G. Hagadorn, consultant in engineering for Nevada County; and Mr. Robert W. Felton, Felton Enterprises. The information was submitted to FEMA over the period from April 1985 to July 1986.

This study was also revised on February 5, 1997, to show modifications to the flooding along Wolf Creek, from Allison Ranch Road upstream approximately 2.8 miles to a location near the confluence of Little Wolf Creek with Wolf Creek in the City of Grass Valley. An additional 1.1 miles of Wolf Creek was also studied from near Idaho-Maryland Road upstream to approximately 0.5 mile upstream of Brunswick Road. An approximate 0.5-mile reach of Little Wolf Creek was studied from 1.2 miles to 1.7 miles upstream of South Auburn Road. Wolf Creek and Little Wolf Creek were studied by detailed methods. The hydrologic and hydraulic analyses for the February 5, 1997 revision were performed for FEMA by Ensign & Buckley Consulting Engineers, under Contract No. EMW-90-C-9133, and by G&P, under Contract No. EMW-89-C-2846.

For this countywide FIS, no updated detailed hydrologic and hydraulic analyses were prepared. MAP IX-Mainland compiled for FEMA, existing data into digital format. MAP-IX completed this work in January 2009 under Contract No. EMF-2003-CO-0047.

Base map information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1":24,000' from aerial photography dated 2005.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 10N. The horizontal datum was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zone used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of information shown on the FIRM.

### 1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

The dates of the initial and final pre-countywide CCO meetings held for Nevada County and the incorporated communities within its boundaries are shown in Table 1, "Initial and Final Pre-Countywide CCO Meetings."

**Table 1 – Initial and Final Pre-Countywide CCO Meetings**

<b>Community</b>	<b>Initial CCO Date</b>	<b>Intermediate CCO Date</b>	<b>Final CCO Date</b>
City of Grass Valley			
(1 <sup>st</sup> revision)	July 1978	February 15, 1979	August 5, 1981
(2 <sup>nd</sup> revision)	July 27, 1988	December 29, 1988	September 27, 1990
Nevada County (Unincorporated Areas)			
(1 <sup>st</sup> revision)	July 13, 1978	<sup>1</sup>	August 5, 1981
(2 <sup>nd</sup> revision)	<sup>1</sup>	<sup>1</sup>	<sup>1</sup>

<sup>1</sup>No dates available



For this countywide FIS, a CCO meeting took place on November 25, 2008 and was attended by representatives of FEMA, the communities, and the study contractor.

## 2.0 AREA STUDIED

### 2.1 Scope of Study

This FIS covers the geographic area of Nevada County, California.

All or portions of the flooding sources listed in Table 2 "Flooding Sources Studied by Detailed Methods," were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

**Table 2 – Flooding Sources Studied by Detailed Methods**

Clear Creek	Squirrel Creek Tributary 2
Deer Creek	Squirrel Creek Tributary 2-1
Donner Creek	Summit Creek
Little Wolf Creek	Trout Creek
South Fork Wolf Creek	Truckee River
Squirrel Creek	Wolf Creek
Squirrel Creek Tributary 1	

The areas studied by detailed methods were selected with priority given to all known flood hazard and areas of projected development or proposed construction throughout Nevada County.

Numerous flooding sources in the county were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the communities.

This countywide FIS also incorporates the determination of Letter of Map Revision (LOMR) case number 06-09-B008P, dated September 29, 2006, for the Town of Truckee.

### 2.2 Community Description

Nevada County, in northeastern California, is a narrow strip of land, 10 to 25 miles wide, that extends some 70 miles across the north-central Sierra Nevada range from Yuba County to the California-Nevada State line. It is bordered by Washoe County, Nevada to the east; Sierra County to the north; Yuba County to the west; and Placer County to the south. The total land area of Nevada County is 625,920 acres, and it is one of the smaller counties in California. Nearly all of the county is mountainous. The main crest of the Sierra Nevada range extends across

the eastern part of the county, with elevations ranging from 3,000 to more than 9,000 feet.

In 2007, the estimated population of Nevada County was 97,118 (Reference 27).

The western portion of the county is characterized by mild winters, with little snow. Winters along the crest of the Sierra Nevada range and eastward are long and cold, with heavy snowfalls. Annual precipitation ranges from approximately 35 inches in the west to nearly 70 inches at the summits of the ranges (References 1 & 2). Peak summer temperatures in July average between 95° F and 100° F, and the winter temperatures in January average between 35° F and 55° F. The growing season (free from freezing temperatures) varies from in excess of 250 days in the western portions of the county (usually from mid-March to November), to as low as 25 days in the eastern portions (usually from mid-June to July).

Nevada County has generally shallow soils (typically loams and sandy loams underlain with clay substratum or no substratum with a pronounced amount of rock outcrop) overlying dense igneous and metamorphic rock (Reference 3).

Vegetation in Nevada County has an extreme range in type due to the large variation in elevation, climate, and soil. There are six basic zones of plant life in Nevada County that are characterized in Table 3, "Typical Plant Life in Nevada County" (Reference 3).

**Table 3 – Typical Plant Life in Nevada County**

<b>Zone</b>	<b>Elevation</b>	<b>Typical Plant Life</b>
Upper Sonoran	800-4,000 feet	Grassland intermingled with shrubs and trees
Transition	2,000-6,500 feet	Ponderosa pine
Canadian	6,500-8,000 feet	Red fir, Jeffrey pine, lodgepole pine, and silver pine
Hudsonian	7,500-10,500 feet	Whitebark pine, lodgepole pine, foxtail pine, and mountain hemlock
Arctic – Alpine	Above 10,500 feet	Grasses, sedges, and flowering plants
Mixed Conifer	5,500-7,500 feet	Mixed coniferous forest intermingled with brushland

**RESOLUTION NO. 2009-XX**

**A RESOLUTION OF THE CITY COUNCIL OF NEVADA CITY  
ESTABLISHING THE TIME AND PLACE  
OF CITY COUNCIL MEETINGS**

**WHEREAS**, the Nevada City Municipal Code Section 2.04.010 was amended by Ordinance No. 2007-01, effective February 23, 2007, to state that the regular meetings of the City Council shall be held at City Hall on the second and fourth Wednesdays of each month at 7:00 p.m. and that the City Council may change the regular meeting times by Resolution; and,

**WHEREAS**, a City Council Meeting is any publicly noticed congregation of a majority of the members of the City Council at the same time and place to hear, discuss, deliberate, vote upon, and/or otherwise transact the public business that is within the subject matter jurisdiction of the City Council; and

**WHEREAS**, the Council may provide by resolution the time and place for regular meetings, that closed sessions may be scheduled before or after regular meeting, and/or as a special or adjourned meeting; and,

**WHEREAS**, adjourned regular meetings, study session and workshops may be called by a majority of the Council at a time and place convenient, with the City limits, and advantageous for public participation and special meetings may be called by the Mayor or by three members of the City Council with a minimum 24 hours public notice; and

**WHEREAS**, generally, meeting business, other than closed session items, should be completed by 9:30 p.m. and, if at that time the Council has not concluded its business, it will review the balance of scheduled business to determine by majority vote whether to extend the meeting or continue consideration of the remaining items to another meeting and more meeting time is desirable to allow timely completion of City business.

**NOW, THEREFORE, BE IT RESOLVED** that effective with the first City Council meeting in January 2010, that the regular City Council meetings shall commence at 6:30 p.m. on the second and fourth Wednesday each month in the Council Chambers of City Hall, unless recessed or rescheduled by an action of the majority of the City Council,

**PASSED AND ADOPTED** at the regular meeting of the City Council of the City of Nevada City on the 18<sup>th</sup> day of November, 2009, by the following vote:

**AYES:**

**NOES:**

**ABSENT/ABSTAIN:**

**ATTEST:**

\_\_\_\_\_  
**Reinette Senum, Mayor**

\_\_\_\_\_  
**Niel Locke, City Clerk**